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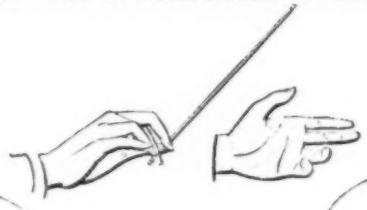

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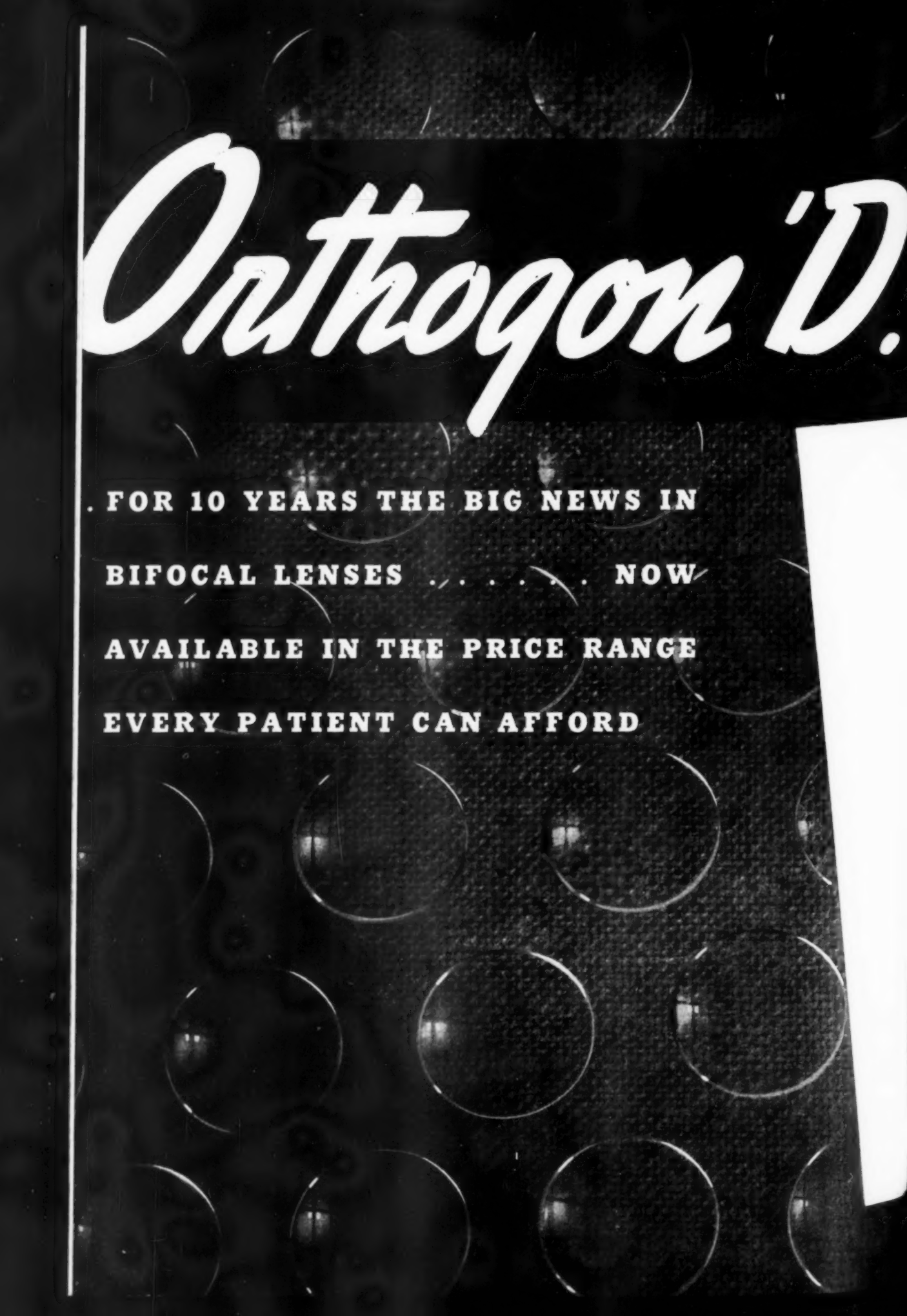
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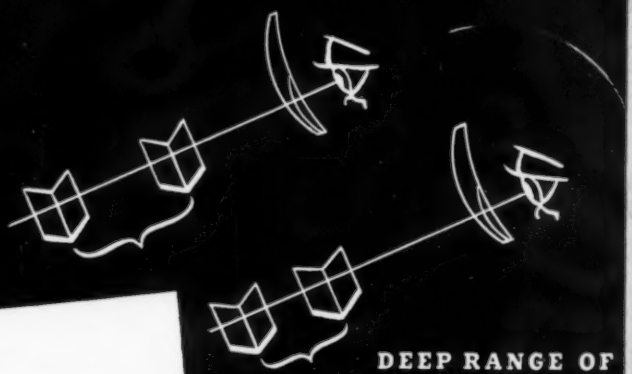

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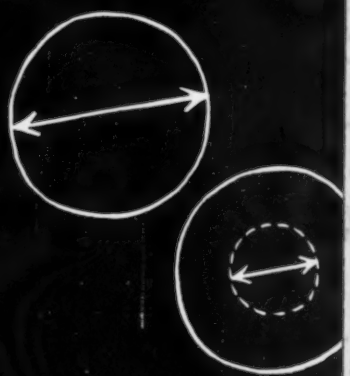

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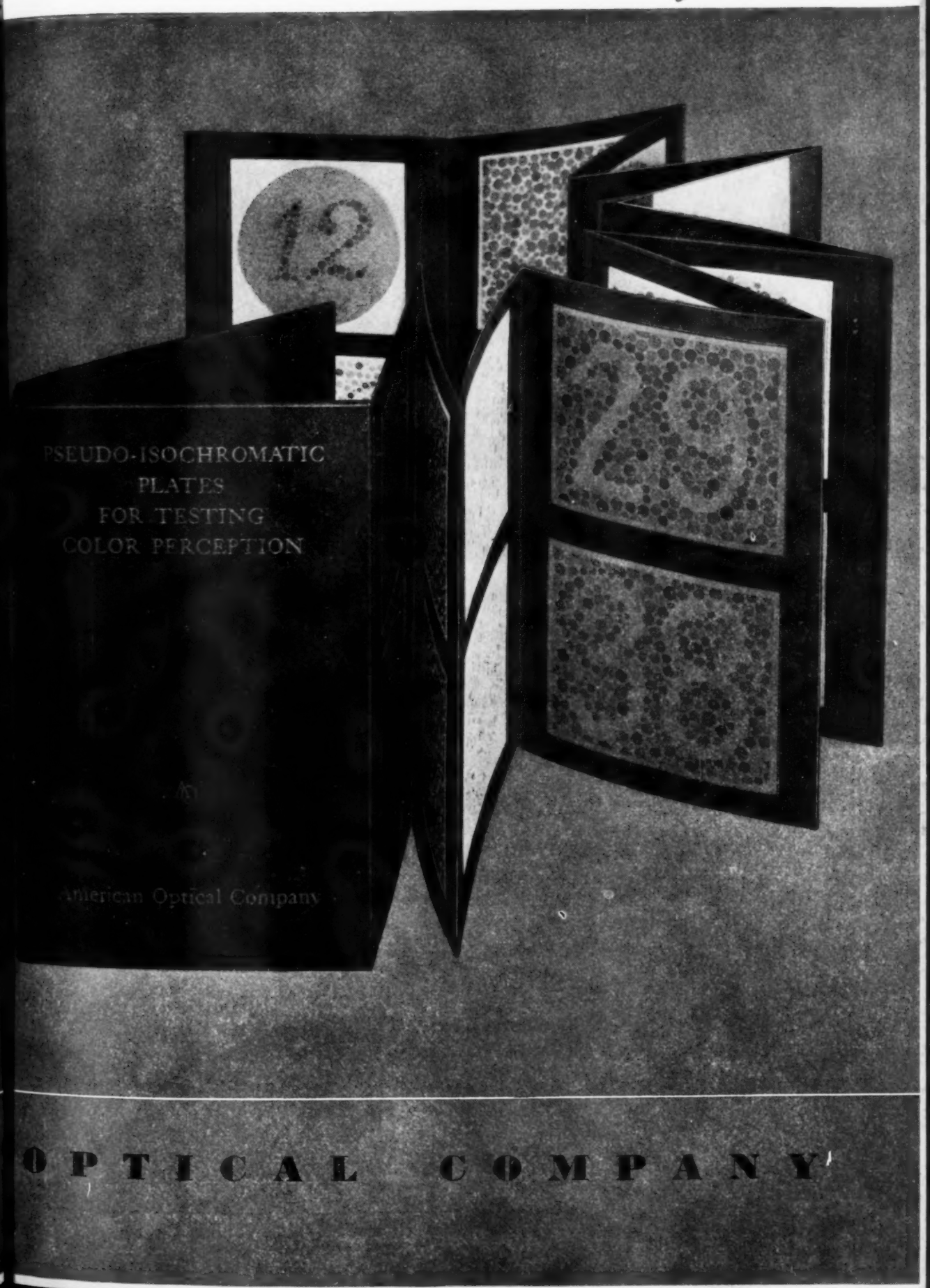

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OCULAR DISORDERS AND EAR CONDITIONS*

Martin A. Furman, M.D.
New York, N. Y.

INTRODUCTION

Because I spoke last year on sinus conditions relating to ocular disorders, I have chosen this year to discuss the ear conditions that affect this organ. The two chief ear conditions that produce ocular complications are (1) infection of the labyrinth, and (2) infection of the petrous bone. However, infection of the labyrinth presents so many phases which are of practical interest, that only by the elimination of much that I would like to include, would it be possible for me to discuss both these subjects in the limit of time of this presentation. I am therefore going to confine myself to the labyrinth, and hope that at some future time I may have the pleasure of presenting to you the salient features of petrous bone infection and its ocular complications.

ANATOMY OF THE LABYRINTH

To understand the mechanisms involved in infection of the labyrinth, a brief review of the anatomy will be necesary. The labyrinth, otherwise known as the inner ear, consists of an organ of equilibrium and orientation and also an organ of hearing. It displays a group of membranous cavities having nerve endings and filled with a fluid called endolymph. This is enclosed in a bony capsule, called the osseous labyrinth. It is supported in this capsule by a fluid called perilymph. The entire structure is encased in the petrous bone, on the inner side of the middle ear. The osseous labyrinth is separated anatomically into three portions: viz., (1) a central cavity, the vestibule, (2) a posterior portion, the semi-circular canals, and (3) an anterior portion, the cochlea. The *vestibule* is just internal to the middle ear and receives the vibra-

*An abridgment of the material presented before the Scientific Congress of the Interprofessional Relations Committee, New York State Optometric Association, Hotel Pennsylvania, New York City, April 28, 1940. Submitted for publication June 1, 1940.

tions of sound, transmitted by the stapes, through the oval window. There is a round window in the vestibule, covered by a membrane which compensates for the vibrations transmitted by the oval window. The membranous structures in the vestibule consist of two parts: (1) the utricle, and (2) the saccule. The utricle, oblong in shape, is in the superior, posterior part of the vestibule and communicates with the semi-circular canals. There is a yellow thickening on the wall of the utricle called the "macula acustica." A clear, transparent semi-fluid substance covers the macula, and contains crystals of calcium carbonate, called the "otoliths." The saccule, globular in shape, communicates with the cochlea. It also has a macula acustica and otoliths similar to those of the utricle. A number of stiff hairs, or cilia, project from the nerve cells of the macula in both the saccule and utricle, and are connected in this way, with nerve filaments that travel, with the filaments coming from the semi-circular canals into the eighth nerve. The *semi-circular canals*, three in number, lie behind and above the vestibule and communicate with the latter by five orifices. They are of unequal length and describe almost a circle in each case. With the head erect and chin withdrawn, one of the canals is vertical and forward in direction, and is called (1) the "anterovertical semi-circular canal," another is vertical and backward in direction, (2) the "posterovertical semi-circular canal" and third, the shortest of the three, runs in a direction outward nearly in a horizontal plane, the (3) "external or horizontal semi-circular canal." Each canal has one dilated end, called the "ampulla," each of which has a separate opening into the vestibule, while, of the smaller ends, the external or horizontal has a separate opening and the posterosuperior and anterosuperior join into one opening before entering the vestibule. The membranous semi-circular canals are similar in number and general form to the bony canals, except that they are only about one-third the latter size. They communicate with the utricle. The ampulla is much thicker than the other portions of the canal, and almost fills the bony encasement. The ampullae have structures similar to the maculae of the utricle and saccule, which are called "crista acustica," viz.: a group of stiff hairs or "cilia" projecting from nerve cells and laying in a gelatinous substance, but only occasionally are otoliths found in the fluid of the ampullae. The cristae acusticae have nerve filaments which meet the filaments of the maculae acusticae of the utricle and saccule to form the vestibular portion of the eighth nerve. The *cochlea* is the organ of hearing and is placed almost horizontally in front of the vestibule. It resembles in cross-section the ordinary garden-snail shell,

with its base facing inwards toward the brain. The membranous cochlea receives the vibrations of sound and transmits its message from the terminal filaments of the nerve cells in the "Organ of Corti" to the cochlear portion of the eighth nerve. Since involvements of the cochlea are of no significance to us in the discussion of ocular disturbances, further description of this organ is unimportant.

THE NERVES—The vestibular and cochlear branches of the eighth nerve are traced to their common trunk within the internal auditory meatus, situated on the lower, inner aspect of the petrous bone; from there the trunk passes across the base of the brain to the medulla. In the medulla it communicates with three nuclei: (1) the *central nucleus*, (2) the *accessory nucleus*, and (3) *Deiter's nucleus*. From the central and accessory nuclei, auditory fibres are sent to the temporal lobes for hearing perception. The vestibular fibres are principally connected with Deiter's nucleus, and through fibres leading from Deiter's nucleus, with the cerebellum. Nerve filaments from these nuclei communicate with nerve filaments to the muscles of the eye and the body, to complete the reflex pathways which take part, at least, in a contributory manner, in controlling the equilibrium and orientation of the head and the rest of the body in space.

THE VESTIBULAR MECHANISM

Let us take up the mechanism of these reflexes. It is called the vestibular mechanism, and its function is performed by the saccule, utricle and the semi-circular canals. Whatever may be their function in health, it is probable that the utricle, saccule and canals act in concert. Experimental injury to one causes subjective and objective phenomena similar to any one of the others. The phenomena of vestibular irritation have been carefully studied by a host of observers in different parts of the world. These observations, while of immense value in their bearing upon the symptoms of labyrinthine *disease*, have thrown but little direct light upon the vestibular function in *health*. We know that the vestibular mechanism is not an organ essential to man's power of equilibrium, for after its complete removal, the equilibrium of the individual is soon re-established. I have had the opportunity of examining an individual in whom the function of both labyrinths was absolutely lost, without other complications, and this patient seemed to be rather above the average in muscular strength and potential efficiency. It is probable that the vestibular mechanism are, in one sense, organs of orientation, in that they enable man under all conditions, i.e., in light, darkness or

in whatever position the body may be placed, to subconsciously determine the different parts of his body. It is the sudden withdrawal of this power which places the individual, after removal of a labyrinth, in some danger of a serious accident. That he soon learns to guard against such mishaps does not disprove the value of these organs in health. It proves simply that certain other faculties, e.g., the muscle, joint, tactile and sight senses, have so enlarged their scope as to compensate for that which has been lost.

PHENOMENA AND TESTS OF VESTIBULAR IRRITATION

Experiments by a host of observers have proved that when the fluid in the semi-circular canals is stimulated to move, certain definite reflex phenomena can be elicited. These have been used to study the labyrinth in the normal person and to compare the results with the response in the abnormal labyrinth. Besides, the acute reactions of a patient suffering from acute diffuse inflammation of the labyrinth can thus be interpreted. A knowledge of the phenomena and the tests used to elicit them would be necessary before one could clearly understand the symptoms that arise when the labyrinth is affected. Let us first study these phenomena and apply them to the tests.

PHENOMENA

In 1892, Ewald established the fact that when the fluid in each semi-circular canal is stimulated to move in any one direction more excessively than normal, a *nystagmus, a vertigo,* and a *disturbance in equilibrium* occur together which have a definite coordinating response in each type of excitation, and each one of these three phenomena has a definite characteristic. *With regard to the nystagmus*: It is characterized by a slow movement of the eye in one direction and a quick movement in the opposite direction. The slow movement is induced by the vestibular impulse, the quick recoil is controlled by the central nervous system. The slow component is always in the same direction as the induced flow, while the quick recoil is in the same plane in the opposite direction. Although the slow component is really the vestibular response, we are accustomed to name the direction of the nystagmus in accordance with that of the quick eye movement. The nystagmus can be made more marked by forcing the eyeball more towards the quick component. The endolymph flow and the nystagmus are always in the same plane, viz., stimulating a horizontal canal produces a nystagmus in the horizontal plane, called "horizontal nystagmus," stimulating a vertical canal produces a nystagmus in the vertical plane called "rotary nystagmus." In

each case the nystagmus is really rotary, e.g., a rotation on the axis of the eyeball. The endolymph flow toward the ampulla causes a nystagmus twice as forceful as a similar movement toward the small end. *With regard to the vertigo*: Vestibular vertigo is always rotary in character; that is, it is always a definite sensation of turning in one direction. Either the head, body, or both are turning (so-called "subjective vertigo"), or the objects in the environment are turning (so-called "objective vertigo"). The plane of rotation is always in the same plane as the nystagmus. The direction of the vertigo is always in the same direction as the quick component of nystagmus (with one exception: in the after-rotation reaction in the face-up position. This will be understood later on, after explaining the rotation test). Increase in the nystagmus reaction is accompanied by increase in the vertigo. When the vertigo is marked, nausea and vomiting may be induced. *With regard to disturbances in equilibrium*: These are known as reaction movements, namely, past-pointing, swaying, and falling.

In the past-pointing test, the patient sits with his arm outstretched and his index finger touching the examiner's finger. Then, with his eyes closed, he raises his arm to the vertical and attempts to touch the examiner's finger in lowering his outstretched arm. When it is seen that the patient is going to point past the original position either to the left or right, the examiner's finger is moved so that it will be touched, to avoid the patient recognizing his error. This is repeated a few times before concluding that the error is constant.

In the swaying and falling tests, the patient stands with the feet together, eyes closed, face front, then with the face turned right and left, and then over the shoulder to right and left. The swaying and falling is noted. The same reactions are noted with the patient standing on one foot, and also while walking forward and backward with the eyes closed, in case the first test does not seem satisfactory. The reaction movements are caused by the vertigo. They are an exaggeration of the ordinary body movements normally used in maintaining equilibrium. They are proportionate in degree to the intensity of the vertigo, and are always in the same plane. Since the vertigo is always rotary in character, the body movements have also a rotary tendency. The person past-points, sways or falls in the direction in which this rotation throws his body. The direction is always opposite to the vertigo—a compensatory equilibrium mechanism.

To review briefly the coordination of these three mechanisms: The

movements are all in the same plane; namely, the plane of the canal stimulated. Nystagmus and vertigo are in the same direction, that is, away from the canal stimulated; while the reaction movements of past-pointing, swaying and falling are opposite to these, that is, towards the canal stimulated.

RESPONSE IN ACUTE DIFFUSE LABYRINTHITIS: Such is the response when a single semi-circular canal is stimulated. However, in the *acute stage of a diffuse labyrinthitis*, all the canals are stimulated at the same time and in a very marked degree. The reflexes observed are not as simple, yet they can be more or less interpreted in the light of what has been just mentioned. When the acute diffuse labyrinthitis is *unilateral*, the *nystagmus* is commonly a combination of the horizontal and rotary type, with the quick movement away from the affected ear, and will be aggravated by looking toward the normal side. The vertigo is intense and the patient has the impression that surrounding objects are rotating about him in such a bewildering fashion that he is unable to correctly describe his sensations. When he is able to do so, it is found that objects seem to rotate to the healthy side; e.g., in the same direction as the nystagmus and it increases on looking toward the healthy side. The past-pointing and falling are proportionate to the intensity of the vertigo and to the diseased side, since the reaction movements always are in the opposite direction to that of the vertigo. When the hearing loss is found to be total, the entire labyrinth is involved; and when it is only partial or slight, the cochlea is not involved in the process. When the acute labyrinthitis is bilateral and of equal degree, no vestibular syndrome can be elicited. The spontaneous nystagmus, vertigo and reaction movements have no definite direction or co-ordination and in some cases they do not even appear.

TESTS FOR LABYRINTHINE FUNCTION

Let us now describe briefly the practical tests that are used to elicit the state of function of the labyrinth.

Unless the patient is seen during an acute stage when the nystagmus, vertigo and reaction movements are present and can be easily observed, the information obtained from *a careful history* may be very helpful in leading to a correct diagnosis. In the history, the examiner wants to know whether the patient's symptoms correspond, and their intensity. The questioning must be in detail in order to obtain accurate information.

The next procedure is to elicit the spontaneous occurrence of vertigo, past-pointing and nystagmus, without the aid of special tests used to induce them. When the vertigo is severe, as in the acute stage of labyrinthine irritation, the sufferer may present himself *in bed,* with one head position preferable to any other, fearful of any head movement lest a fit of nausea and vomiting be induced, eyes closed, the skin pale and clammy. The spontaneous nystagmus is readily visible. The type of vertigo can be elicited by the past-pointing test in bed, either with the arm or with the leg. *In ambulatory patients,* the use of past-pointing, swaying and falling tests may be used to disclose the reaction movements of vertigo. After this examination, that for spontaneous nystagmus is carried out. In the "face front" position, the eyes are observed while looking straight away. The examiner's finger tip is then used to direct the gaze from right to left and up and down. When observing the eyes for horizontal nystagmus, the finger should never be carried beyond *binocular* fixation since at the extreme lateral gaze, nystagmus movements commonly are seen in normal persons ("physiological nystagmus"). The same procedure is repeated with the face up, then with the head bent over the right shoulder, and then with the head bent over the left shoulder.

Having noted the *spontaneous* reactions, tests are now used to induce the vestibular responses. These are: (a) The Rotation Test, (b) The Caloric Test, (c) The Galvanic Test, and (d) The Fistula Test.

The Rotation Test: The patient is seated erect in a revolving chair in the "face-front" position. This brings the horizontal canal in the plane of stimulation. The patient's eyes are shut and the chair is rotated to the right 10 times in exactly 20 seconds and then suddenly stopped. The patient opens his eyes and looks straight forward on an object more than 20 feet away. The result in the normal, reveals a horizontal nystagmus with the quick component to the left. This corresponds with Ewald's experiment: When the chair is stopped suddenly after the rotation to the right, the endolymph in the horizontal canals *continues* to the *right* by inertia and therefore a nystagmus to the left is elicited. The same procedure is carried on in turning the patient 10 times to the left. By changing the position of the head, different sets of canals are brought under the influence of the experiment, and thus the plane of nystagmus is caused to vary. The average duration of the nystagmus is about 20 seconds, with very little difference in the time

element from left to right. The diagnostic value of this experiment depends therefore, entirely upon a comparison of the duration of the nystagmus in opposite directions. For example, if a horizontal nystagmus following right rotation lasts for 10 seconds, and that following left rotation lasts 20 seconds, the findings are presumptive evidence of a total loss of the left vestibular function. The key to the diagnostic significance of the rotation test is found in Ewald's theorem that the endolymph flow toward the ampulla causes a nystagmus twice as forceful as a similar movement toward the small end. Knowing the position of the ampullae in the canals, the results obtained can be elicited. The amplitude of the nystagmus is variable and has no known significance. The duration of the vertigo and past pointing after rotation is not regularly tested, unless it is indefinite in other tests. The vertigo lasts as long as the nystagmus, namely, 20 seconds and the past-pointing is from 3 to 12 inches away from the center—in most normal reactions. The vertigo and past-pointing follow the planes and directions described previously, and vary from right to left with the variations of the nystagmus.

The Caloric Test: The examiner now proceeds to the caloric test. The patient sits in the "face-front" position and the right ear is irrigated with a continuous flow of cold water, kept at 68 degrees F. The eyes of the patient are focused on a watch held in the mid-position of the face of the examined. The eyes are inspected for nystagmus, and the time is taken from the beginning of the irrigation to the beginning of the nystagmus. Having noted the direction, the plane and the amplitude of the nystagmus, the head is now turned to the "face-up" position, so as to incur stimulation of the horizontal canal. The explanation of the phenomena in this test is that the cold water cools the endolymph in the canal having a vertical position, so that the fluid flows from above downward as it is cooled. The reflex response therefore would be that, when the right ear is irrigated with the face forward, the antero-vertical canal is stimulated, so that its fluid flows from the left downward toward the right. The result is a slow rotary nystagmus from left to right, and a quick return in the opposite direction. When the head is turned "face-upward," the horizontal canal now assumes a vertical position and the nystagmus becomes horizontal, with the quick component away from the ear stimulated. Vertigo and past-pointing are elicited in the same way as in the rotation tests. The same procedure is carried out in the left ear. Nystagmus, vertigo and past-pointing follow

the usual co-ordination of plane and direction. The reactions should appear in from 35 to 60 seconds, and if they do not appear in five minutes, there is a gross loss of vestibular reaction on the side tested.

The Galvanic Test: Nystagmus, vertigo and reaction movements may be induced by the galvanic current with the same milliamperage after destruction of the vestibular end-organ as with it intact, *if* the vestibular nerve is not degenerated. Hence it is used to differentiate between a lesion of the end-organ and one of the nerve. When there is no response to the rotation or the caloric tests, the galvanic test is used. One wet electrode, the negative one, is held by an assistant to the ear, while the positive electrode is held by the patient in his hand. The assistant increases the milliamperage until the examiner observes the beginning of nystagmus; then the milliamperage is quickly reduced to zero before removing the electrodes so that the patient does not experience a shock. The polarity switch is now changed so that the positive electrode is on the ear and the negative electrode is in the hand, and the observation for nystagmus is repeated. The findings are that when the nystagmus is induced in from four to eight milliamperes, the nerve is not degenerated. If no nystagmus could be induced at 15 milliamperes, the nerve as well as the vestibular end-organ, is degenerated.

I might mention here that hearing tests are also performed, in every case, to note the condition of the cochlea, in relation to the vestibular part of the end-organ.

The Fistula Test: This test is used in suspected labyrinthine disease to determine whether or not a fistulous opening is present in the labyrinth, leading to the middle ear. The patient is seated with the head against a rest and he is told that he may have some vertigo during the test. A Siegle speculum is inserted tightly into the ear canal and its bulb is alternately compressed and relaxed. (The Siegle speculum is a funnel shaped metal piece with a cover over the top, so that it is air-tight when placed in the ear. A bulb is attached to the funnel to allow air to be pressed in.) If nystagmus, vertigo, and the reaction movements are induced either on compression or relaxation of the bulb, the fistula test is positive. A positive reaction regardless of the direction of the induced nystagmus, is presumptive evidence of a fistula in the presence of a chronic suppurative ear infection. However, a negative reaction does not exclude a fistula. The fistula may not have been reached by the compressed air, or when it did, no function could be elicited from the circumscribed fistulous area.

Having completed a discussion of the signs and symptoms of vestibular irritation, we draw now the following conclusion: A peripheral lesion of the vestibular labyrinth can nearly always be differentiated from a central lesion along the vestibular nerve pathways, by remembering the following facts:—The nystagmus, vertigo and past pointing always have the same characteristic motion, are always in the same plane and have always the same definite relation to each other. They can always be elicited together and the intensity of one is always directly proportionate to the intensity of the others. There is greater certainty that a peripheral and not a central lesion is present when a unilateral impaired hearing can be elicited on the side suspected. Tumors, abscesses, vascular and syphilitic lesions of the brain and intracranial nerves, ocular nystagmus, and neurasthenic manifestations can be fairly well differentiated when these facts are kept in mind.

INFECTION OF THE LABYRINTH:

Pathology—We now pass to a consideration of the lesion itself; viz., infection of the labyrinth. Infections of the labyrinth are almost always suppurative. The diffuse *serous* type is comparatively rare and can be distinguished from the suppurative only in the fact that when the acute stage subsides, the symptoms and signs of vestibular irritation clear up entirely instead of leaving any permanent damage to the labyrinth. Suppurations of the labyrinth may be sudden acute diffuse, sudden acute circumscribed, or chronic circumscribed, e.g., with insidious onset. The inflammation is more likely to be circumscribed if the infection has invaded the external semi-circular canal from the middle ear, while it is apt to be diffuse if the organisms gain entrance through the wall of the vestibule. Suppuration of the labyrinth is generally due to extension of the disease from the middle ear through its inner wall, either through the external semi-circular canal, or through the wall of the vestibule. The infection may, however, travel in from the cranium, such as in intracranial tumors, or abscesses and in meningitis. Cerebrospinal meningitis and scarlatinal ears are occasional causes. A not uncommon cause is fractures involving the base of the skull. However, the most common cause of suppurative labyrinthitis is chronic suppurative otitis media. The erosion caused by this process is often accompanied by a cholesteatoma. Clumsy and unskillful radical mastoid operations for chronic discharging ears have frequently induced a suppurative labyrinthitis, especially when, by too thorough curetting, infection was carried through the inner wall of the middle ear. *Acute* otitis media

and mastoiditis rarely leads to suppurative labyrinthitis, but when it does occur, the virulence of the organism is so great that meningitis follows. Occasionally, symptoms of labyrinthine irritation are manifest during the process of an acute mastoiditis, but the hearing is not lost and the signs of irritation are not acute. The symptoms may vary in intensity from day to day and may disappear and reappear again at intervals. The pathologic process is an inflammation around the capsule of the labyrinth, producing an inflammatory reaction to the membranous lining. This is known as a "Perilabyrinthitis." The process may subside completely or progress to actual suppuration, giving the classical symptoms of diffuse suppurative labyrinthitis. It requires the most careful surgical judgment to know how to proceed in these cases.

The Signs and Symptoms of Labyrinthitis vary with the lesion. (1) *In the acute diffuse infection,* the temperature may rise to 103 or 104 degrees, while in many cases with marked symptoms, the temperature may not be higher than 100 degrees. The patient will have marked vertigo, the intensity of which renders the sufferer unable to maintain erect posture. When examined in bed, the patient is poised in the least uncomfortable position and resists any head movement for fear that any alteration will increase the vertigo and bring on a spell of severe nausea and vomiting. The eyes are closed and a dark room is preferred. The face is pallid and the skin clammy. The position of the head is always that of lying on the *healthy* side, for the nystagmus, a combine horizontal and rotary type, is eased when the eyes look upward from the pillow; namely, toward the diseased side. The vertigo is usually so marked that the patient is not able to describe the plane, but when he is able to do so, objects seem to rotate always toward the healthy side. Past-pointing and falling are proportionate to the intensity of the vertigo and toward the diseased side, since the reaction movements are always in the opposite direction to the vertigo. The hearing is completely gone on the affected side. The acute symptoms usually run a fairly characteristic course, when no intracranial complications occur. Usually, from the second to the fourth day, the nausea and vomiting are relieved. From the third to the fifth day, the vertigo is so much less pronounced that the patient is comparatively comfortable in bed. Past-pointing and falling disappear with the vertigo. The nystagmus, however, is still present and is elicited by turning the eyes away from the lesion. By the end of the second week, the vertigo is so relieved that the patient is able to stand without discomfort. Even now, however,

sudden or exaggerated head movements are apt to induce vertigo and loss of equilibrium. Finally, by the end of the third week, the spontaneous nystagmus usually disappears completely. This describes the average case, with, of course, considerable variations in individuals.

Following the acute stage, the *latent stage* sets in. The patient may be up and about. He may experience no subjective symptoms except deafness and certain defects of orientation. The patient must learn to regain his equilibrium in all circumstances and after considerable time and experience, he does. The muscle, joint, tactile, and sight senses take up the burden. For example, at first, the sudden changes of the head and body will make the patient dizzy, such as stooping or looking up, or bending backwards, or walking in the dark, or swimming,—but in time this type of vertigo is usually wholly relieved as other senses are trained to compensate completely for the lost vestibular function. (2) *In the circumscribed labyrinthine lesions*, the symptoms vary with the mode of onset of pathology. When the erosion is slow and insidious, and confined to a semi-circular canal, usually the horizontal, the symptoms may never be manifest and the lesion is discovered accidentally when testing a chronic discharging ear for indications for operation, or it may be discovered during the performance of a mastoid operation. However, the majority of circumscribed lesions start as in the diffuse lesions, e.g., with acute symptoms; and the symptoms and signs are of the same character except that the hearing throughout the attack remains fairly good. For, circumscribed lesions always start in the semi-circular canals. When the invasion occurs in the cochlea or vestibule, the infection is bound to become diffuse. The acute symptoms usually subside in from ten days to three weeks and the patient reaches the latent stage, corresponding to the latent stage of diffuse suppurative labyrinthitis, with the exception that the hearing is not entirely lost on the affected side. (3) *In perilabyrinthitis*, the symptoms vary with the degree of irritation of the labyrinth. In mild cases there are simple attacks of nystagmus, with or without vertigo, occurring during an acute mastoiditis or after a simple or radical mastoidectomy. The attacks may occur spontaneously or may be induced by sudden changes in the position of the head. Hearing is only slightly impaired. These attacks may subside completely or progress into a full-blown diffuse labyrinthitis.

Prognosis: With regard to the final outcome of any type of labyrinthitis, the prognosis is always doubtful. Whether or not an apparently serous process will resolve or lead to suppuration, and whether

or not a suppurative process will remain localized or spread to the meninges, is always a problem of much concern. A suppurative process may occasionally resolve completely and form connective tissue in its wake. But usually, the pus continues to flow from the middle ear and bone particles slough out of the wound with it. The suppurative process may remain quiescent for many years and then give rise to a rapidly fatal intracranial complication. There can be no doubt, therefore, that a patient who presents symptoms of chronic purulent otitis media plus symptoms of past suppurative invasion of the labyrinth, harbors a lesion which places his life in more or less constant danger.

Management: The management of a case of labyrinthitis, therefore, requires the most careful judgment and the best of skill. For, the patient's life depends not only on the physician's ability to interpret correctly the symptoms and signs, but to deduce therefrom, a correct plan of treatment. Suppurative labyrinthitis, per se, is not a fatal malady. The necessity in any case for immediate operation must be determined not by the evidences of vestibular involvement, but by the danger of intracranial infection. Early operative intervention is often contra-indicated in the acute stage. When a spread of the infection is not threatened, it is best to wait for the latent period, so that time is given for walling off of the suppurative process. In the latent period, the labyrinth should be tested, to discover the type of operation to perform. When the hearing is lost completely, a radical labyrinthectomy is performed. This affords a reasonable promise of cure. When the hearing is not lost completely, as in the circumscribed types, two groups of cases must be considered. (1) Those in whom the vestibular irritability is completely lost and there are no further attacks manifest and (2) those in whom periods of comparative comfort alternate with recurrent attacks of vertigo. In the former no spread of the disease is imminent and a conservative radical mastoid operation should be performed, making room for adequate drainage of a fistula if and when discovered. In the latter, a labyrinthectomy is best performed, even though the hearing would be sacrificed, because of the imminent danger of spread of the disease.

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AN INSTRUMENT FOR PHOTOGRAPHIC RECORDING OF THE POSITION OF A PAIR OF LENSES MOUNTED IN FRONT OF THE EYES*

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In order to designate the position of a pair of lenses, arbitrary reference points must be selected which are fixed with respect to the head. For this purpose the followng planes, lines and points are defined.

(1) The *line of sight* of each eye connects the point of fixation and the center of the entrance pupil.

(2) The *center of rotation* represents the point around which the line of sight turns in changing its direction.

(3) The *primary horizontal plane of the head* passes through the centers of rotation of the two eyes, and is perpendicular to a plane touching the chin and the two superciliary ridges.

(4) The *base line* connects the centers of rotation of the two eyes.

(5) The *primary sagittal line* lies in the horizontal plane and is perpendicular to the base line at its midpoint.

(6) The line of sight of either eye is said to be *straight forward* when it is parallel to the primary sagittal line.

When an eye is straight forward its center of rotation may be assumed to lie on the line of sight 13 mm. behind the cornea.

The position of a lens before the eye can be specified in terms of (1) the distance from the front surface of the lens to the cornea measured along the straight forward position of line of sight, (2) the part of the lens penetrated by the straight forward position of the line of sight, (3) the angle of incidence of the straight forward position of line of sight at the front surface, and (4) the meridian occupied by the horizontal mechanical axis of the lens.

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The instrument described below, which is called a topometer photographically records the data necessary for analyzing the position of a pair of spectacles before the eyes. A general view of the apparatus is shown in Fig. 1. Before the patient is permitted to put on his glasses, the optical center of each lens, if it falls within the field of the lens, is

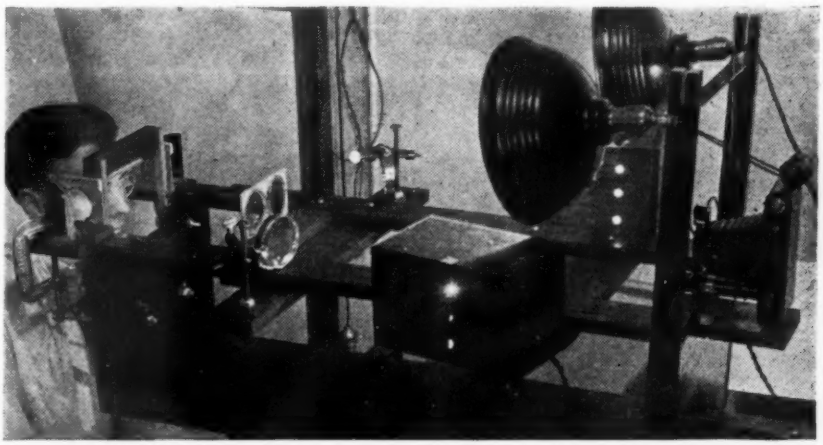

Fig. 1. General View of the Topometer. The accessories for producing a reflected spot of light on the front surface of each lens were not mounted when this picture was taken.

represented by a white cross on the front surface. The axis of the cylinder, if any, may be indicated by a white line; and when desired, the axis of a prism can also be indicated.

After the lenses are properly marked, the patient mounts the glasses on his face in his usual manner, and then places his chin in the chin cup (A) and tilts his head forward till the forehead touches the support (B). This puts the superciliary ridges and the tip of the chin in a common vertical plane. The height gauge (C) which consists of two pieces of celluloid mounted on opposite ends of a block of wood, is mounted on the bench as shown in Fig. 2. On each piece of celluloid is a horizontal line 1½ inches above the level of the bench. The patient then adjusts the chin rest and tips his head towards his right or left shoulder till each eye tested separately sees the horizontal lines on the two pieces of celluloid as coincident. The examiner may then check this adjustment by looking through the peephole (D) mounted at the position of the entrance aperture of the camera. He should see the lines on both pieces of celluloid lined up with the centers of the two pupils. The observer then

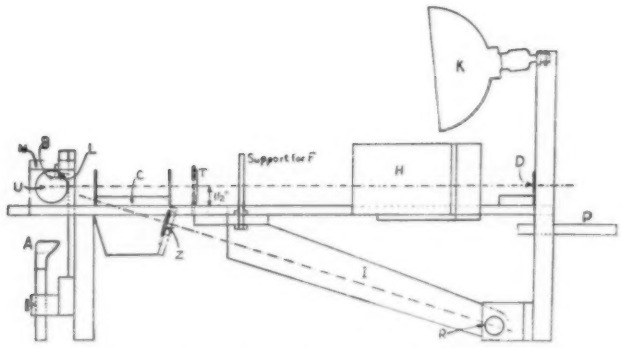

Fig. 2. Side View of the Topometer, including the Height Gauge (C) and Peephole (D) used for adjusting the Patient's head to the instrumnt.

moves to a position behind the patient, and looking down at the top of the patient's head, asks the patient to turn his head to the right or left until the spectacles are lined up as nearly parallel as possible with the forehead support.

The lenses at E and F which are best shown in Figs. 3 and 4, are adjusted so that the light from the lamp houses (G and H) is concentrated on each side of the nose to provide a luminous background for photographing the profiles of the corneas. The lights at J and K provide illumination for the scale L on the front side of the forehead support and the iris of each eye and the frame or edge of the glasses. Two desk lamps, one on each side of the instrument, provide illumination for the scales mounted above the lenses at M and N.

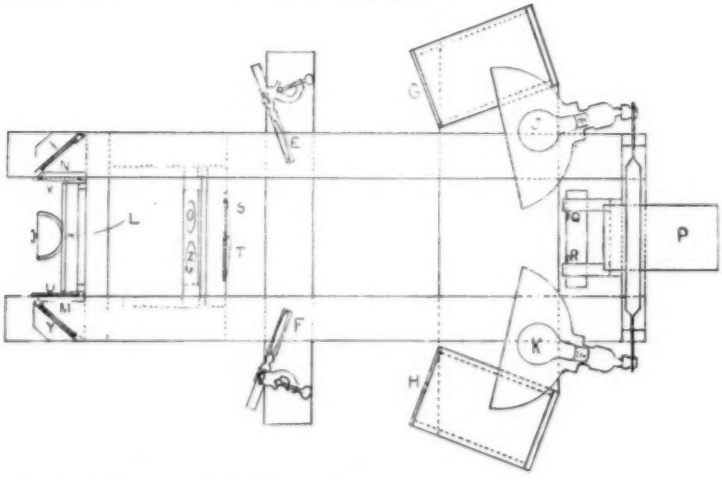

Fig. 3. Top View of the Topometer.

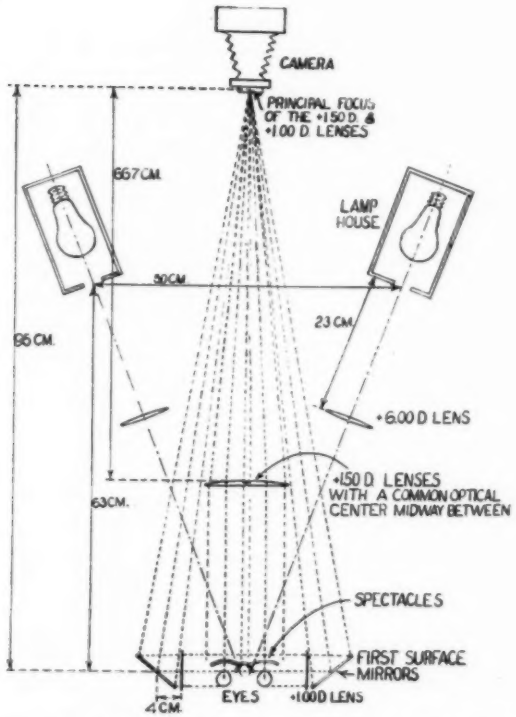

Fig. 4. Diagram of the Optical System, Illustrating the Principles of Orthographic Projection.

When the patient and the lights are adjusted, the peephole and height gauge are removed and the camera, which is prefocused, is mounted on its support (P). It has an F value of 23; Eastman Tri-X Pan film is used and an exposure time of 3 sec. is allowed. During the snapping of the picture the patient is asked to fixate the center of the camera lens. A positive enlargement is made from the original negative. A typical photographic record is illustrated in Fig. 5. (One-half size.)

The lenses at S, T, U, and V make it possible to obtain orthographic projection in both the front and side views. The lenses at S and T may be considered as segments of the same lens whose optical center lies at the center of the bench and falls in the same horizontal plane as the aperture of the cameras. The secondary focus of this lens falls at the center of the entrance aperture of the camera, and consequently chief rays from all points in the front view are parallel before being refracted by the lenses at S and T and hence all the objects photographed are presented in orthographic projection.

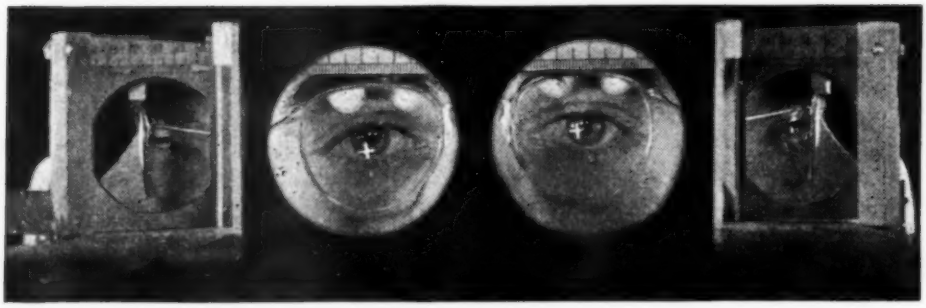

Fig. 5. Photographic Record Obtained with the Topometer. The crosses represent the optical centers of the lenses.

Another feature of this arrangement is that the patient's lines of sight must be parallel while fixating the camera lens.

The mirrors at X and Y make it possible to obtain side views of the eyes and spectacles. The secondary foci of the lenses at U and V fall at the center of the entrance aperture of the camera and hence the side views are also given in orthographic projection. The mirrors are so arranged that the chief rays for the side views are perpendicular to the chief rays in the front view.

The orthographic projection feature makes it possible to set the points of a pair of dividers corresponding to any pair of points in the front or side view photograph and then measure the distance by applying the dividers to the scale in the upper part of the photograph. This measurement gives the displacement in a direction perpendicular to the direction of projection.

The illuminated aperture (R) produces an image by reflection at the front surface of the spectacle lens for the right eye. The aperture (Q) produces an image by reflection at the front surface of the lens for the left eye.

Fig. 6 gives a side view of the light at R and the lens at Z, the front surface of the spectacle lens for the right eye, the lens at T, and the camera. The light at R falls at the primary focus of the lens at Z and the rays falling on the spectacle lens are parallel to the line connecting the light source and the optical center of the lens (Z). They form an angle of 17° with the horizontal plane of the instrument. Since the two sources (Q and R) have the same separation as the optical centers of the lenses (Z and O) the two sets of rays falling on the spectacle lenses are parallel.

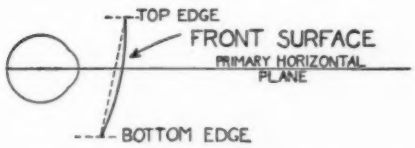

Fig. 6. Profile Drawing of the Right Eye and the Lens Mounted Before it, in which the Protractor Method is used.

Regardless of the location of the reflected image the chief ray for the camera must be parallel to the horizontal plane of the instrument before refraction by the lens at T. Since the angle of incidence is equal to the angle of reflection, the normal to the front surface of the lens at the point corresponding to the image of R in the photograph, makes an angle of 8.5° with the horizontal plane.

The image of R produced by the front surface of the lens can be differentiated from that produced by the back surface by finding out the nature of the prismatic effect at the part of the lens corresponding to the images and then applying the rule that the image produced by the front surface is always displaced toward the base of the prism. If the lens possesses an optical center, the base is directed toward the optical center in the case of a plus lens and away from it in the case of a minus lens. Since a small amount of prism base-up is required to make the images coincide, base-up effects smaller than this would theoretically yield an image from the first surface which appears lower in the photograph than that produced by the back surface, but in such a case the two images would so nearly coincide that it would not be serious if the wrong image were chosen.

Two methods can be used in analyzing the photographic record for the purpose of construction of a profile drawing of the eye and front surface of the spectacle lens.

(1) *The Protractor Method.* This method involves the use of a protractor in measuring the pitch of the lens. Fig. 7 illustrates the procedure for the right eye. Sheets may be prepared in advance with a sagittal section of an eye and a line representing the straight forward position of the line of sight. The drawing is made full size to facilitate making measurements.

In the side view photograph of the right eye in Fig. 5, a line is drawn from the top to the bottom edge of the front surface of the lens. A line is then drawn through the apex of the cornea parallel to the bot-

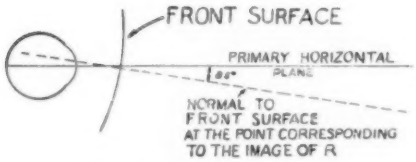

Fig. 7. Profile Drawing of the Right Eye and the Lens Mounted Before it, in which the Reflection Method is used.

tom edge of the ruler to represent the primary horizontal plane. The distance of the intersection of these two lines from the apex of the cornea is then measured. The point of intersection can be located in the drawing by measuring off a corresponding distance from the cornea along the line of sight. The line connecting the top and bottom edges can then be reproduced in the drawing, since the angle which it makes with the primary horizontal plane is the same as it makes with the bottom edge of the ruler in the photograph. This angle can be measured and reproduced with a protractor.

A line is then drawn connecting the centers of the pupils in the front view photographs of the right and left eyes. This line represents the primary horizontal plane. The distances of the top and bottom edges of the front surface above and below the primary horizontal plane are then measured. The top and bottom edges of the front surface can now be located in the profile drawing.

A lens measure can be used to determine the curvature of the lens in the vertical meridian of the front surface and a lens gauge of the same curvature can be used for tracing in the front surface. This curve must pass through the points which represent the top and bottom edges of the front surface.

(2) *The Reflection Method.* In this method, the front surface of the lens must be drawn first. Fig. 8 illustrates the procedure for the lens before the right eye. A line with a slope of 8.5° is drawn to represent the normal to the front surface, at the point at which the image of R, produced by the front surface, is seen in the front view photograph of the right eye. A gauge is then used to trace a profile of the front surface. This gauge must have the same curvature as the vertical meridian of the front surface of the lens as measured with a lens measure.

A line is drawn connecting the centers of the pupils in the front view photographs of the right and left eyes. This line represents the primary horizontal plane. The distance of the primary horizontal plane

above or below the image of R can then be measured and a horizontal line can be drawn in the figure at the same distance above or below the point corresponding to the image of R. This represents the primary horizontal plane in the drawing.

A line is then drawn on the side view photograph of the right eye which passes through the apex of the cornea and is parallel to the bottom edge of the ruler in the photograph. This line represents the primary horizontal plane. The distance is measured along this line from the cornea to the front surface of the lens. The cornea can be located in the drawing by measuring off a corresponding distance from the front surface of the lens along the line representing the primary horizontal plane. A schematic eye can then be drawn in with standard specifications.

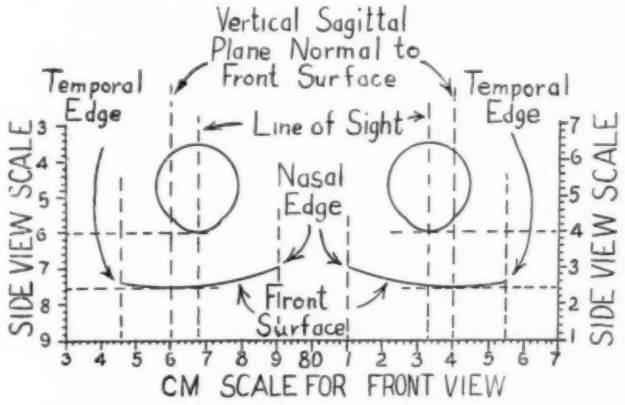

Fig. 8. Horizontal Section through the Eyes and the Front Surfaces of the Two Lenses, constructed from data obtained from a photograph which is similar to Fig. 5.

A horizontal section of the spectacle lenses and the eyes corresponding to the horizontal plane can also be constructed.

Scales are erected on a piece of paper to represent the three scales on the instrument. Two lines are drawn normal to the front scale at points corresponding to the images of Q and R in the front view photographs. These lines represent the normals to the front surfaces of the two lenses at the points corresponding to the reflected images. The position of the front surface of each lens at the level of the apex of the cornea can be located with respect to the side scales. A gauge can then be used to trace the horizontal section of the front surface. This gauge must have the same curvature as the horizontal meridian of the front surface of the lens. The lines of sight can then be drawn in perpendicular

to the front scale at the points corresponding to the centers of the pupils. The position of the apex of each cornea can be located with respect to the side scales and schematic eyes can be drawn in. The nasal and temporal edges of the front surface of each lens can be located with respect to the front scale.

If the drawing shows that the corneas are not equally distant from the front scale, it means that the lines of sight are not actually straight forward, i.e., they are not perpendicular to a line connecting the two centers of rotation. The position that the eyes and head assume during the taking of the photograph does correspond approximately to the position that would be assumed if the person were told to look straight ahead, and therefore more nearly represents the manner in which the eyes are to be used.

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BINOCULAR FIXATION MOVEMENTS DURING A PROLONGED VIGIL*

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INTRODUCTION

Studies of ocular fixation movements have been conducted by numerous investigators using photographic techniques since Dodge's[5] early investigation of the problem in 1901. However, in spite of the fact that the distinction between sleepiness and alertness as well as between vigor and fatigue is probably as apparent in the eyes as in any other part of the body, as far as the authors are aware only two studies have used Dodge's photographic technique to study ocular fatigue during a vigil. Miles[6] and Miles and Laslett[7] studied simple interfixation movements during a prolonged vigil. They found that the difference between alertness and drowsiness was clearly evident in the behavior of the eyes. Their subjects alternately fixed two objects 40° apart, and as drowsiness approached, they found that the speed of movement was decreased; fixation was greatly modified; there were larger corrective movements; and the results were more variable; and when a subject fell asleep, the eyes would continue to make several movements, which were evidently beyond voluntary control. These results were limited due to the fact that only monocular records were taken, and due to spoilage of the film, only beginning and terminal results were obtained throughout a 72 hour vigil.

It was the purpose of this investigation to make a periodic study of ocular fixation movements during a prolonged vigil using a photographic technique which recorded binocular horizontal and vertical movements

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simultaneously. Fixation was studied as the subjects alternately fixed at different distances as well as during simple interfixation movements between objects at equal distances from the eyes.

APPARATUS AND PROCEDURE

Detailed descriptions of the experimental procedures and other data obtained have already been reported.[4,9] Four psychology students participated in the vigil which lasted approximately 65 hours. The subject's eye movements were photographed every 10 hours on a regular prearranged schedule using a camera[2] which recorded binocular horizontal and vertical movements with relatively high magnification. Although the subjects were occupied a great part of the vigil with a large series of tests, they were not required to do continuous visual tasks for any extended period of time.

For simple fixation movements the fixation objects were mounted on heavy cardboard 30 cm. from the subject and were illuminated by a 60 watt lamp. The objects themselves were the words "have" and "save," and they subtended an angle of 26.4° at the subjects' eyes. The subjects changed their fixation between these words keeping time with a metronome beating 90 times per minute.

The second type of fixation movements required convergent and divergent adjustments. Here the subjects changed fixation between a near and a distant object keeping time with a metronome beating 70 times per minute following the same procedure and fixation objects used and described in detail in a previous experiment.[3] The near fixation object, a 0.5 mm. dot within a square, was viewed in a mirror, the virtual image being 224 cm. from the subjects' eyes. The fixation object was printed on a circular screen and illuminated from behind by a 15 c.p. 6-8 volt lamp.

Practice trials were taken before each test and the actual photography was not begun until the subject had completed 5 or 6 movements. The two tests were taken in one continuous series, as the fixation objects were so arranged that the subject could change fixation from one type to the other on command of the experimenter.

RESULTS

The photographic data were tabulated by an expert assistant who was experienced in the measurement and tabulation of eye movement records. Measurements were made directly on the records to the nearest ½ mm., which indicated an ocular rotation of approximately 24 min-

utes. Time was indicated in 1/25 seconds. All records were measured twice independently and where measurements did not check re-measurements were made. The magnitude and time for the binocular adjustments as well as the size of certain corrective movements were determined.

Simple Interfixation Movements. Three characteristics of the simple interfixation movements were measured. Movements to the right and left were grouped together as there were no consistent differences found between them. The divergence during the fixation was measured by determining the difference between the position of the eyes at the beginning of the fixation and the position after the completion of the divergent adjustment. During a large per cent of the movements the eyes fell short of the mark and made a corrective saccadic movement to secure an accurate fixation. These movements are termed corrective movements and were measured by merely determining the difference between the final positions for these two fixations.

TABLE I

Variation in Binocular Fixation Movements During a Prolonged Vigil

Fixation Movements	Testing Interval 0	10	20	30	40	50	60	Post-
Av. Divergence In Minutes	50.40	54.72	31.20	27.84	58.08	52.80	37.44	69.12
Time for Div. Movements in 1/25 Sec.	4.97	4.43	4.40	3.24	4.20	7.58	7.23	5.48
Correct. Movements in Min.	59.68	69.60	52.32	62.40	72.96	115.68	81.60	50.40

The group results are summarized in Table I. They show that the divergent movements during fixation showed no consistent trend as the vigil progressed. However, the time required to complete these movements was considerably greater during the 50 and 60 hour tests. The size of the corrective movements increased during the 40 and 50 hour test and decreased somewhat at 60 hours but was still well above the time taken when the S's had normal sleep. Although the camera used did not permit accurate measurement of the time of the saccadic movements, two of the S's showed marked reduction in speed of movements. These will be discussed below.

A study of the individual records showed results similar to the group, but it also showed periods late in the vigil when the behavior was considerably different from preliminary and post-tests. It is worth noting that these highly variable scores occurred a vast majority of the time during or after the 40 hour tests. This is comparable to similar

results found during visual tests[4]. The highly variable scores were particularly prominent in the time required to complete the divergent fixation movements.

Two of the subjects (Fr and Th) showed little change in interfixation movements throughout the vigil. This was particularly true of Fr who showed no significant or regular changes either in speed or size of binocular adjustments. Although Th showed little change in the size of binocular adjustments, the speed of movement did decrease during one test.

The other two S's showed large changes in fixation and speed of movement at times and these were evident even from a casual inspection of the records. St made no large changes in binocular adjustments or in the corrective adjustments, but the time required to make binocular movements increased substantially. The most evident changes occurred in the time required to make the saccadic movements between the fixation points. The usual time to complete these movements was approximately 2.5/25 seconds with a small range which corresponds to more accurate measurements by Tinker.[8] However, during the 50 hour test St's average time for saccadic movements was 6.7/25 seconds with a maximum of 18/25 seconds, while at the 60 hour test the mean time was 8.3/25 seconds with a maximum of 20/25 seconds. The eye movement records resembled irregular and slightly flattened sine-curves. Another point of interest was found in an extra record taken at 54 hours during which the speed of saccadic movements as well as the binocular adjustments were "normal."

Marked variations also appeared in the final 40 hour records of Li just before he was forced to discontinue and when marked subjective symptoms occurred. During the 30 hour test the speed of saccadic movements was reduced (mean time—5.3/25 seconds, maximum time 8/25 second), but the binocular fixation movements were little impaired. The mean time for saccadic movements during the 40 hour test was 7.25 seconds with a maximum of 13/25 seconds. However, the average time was reduced by one "normal" fixation at the beginning and three "normal" fixations at the end of the record. There were four fixations which varied widely from normal, particularly in binocular adjustments. One was completed slowly, but after a short fixation the right eye turned out 7.2° while the left remained fixed just before the next saccadic movement. Another fixation gave a record which was almost a perfect sine-wave with no definite fixation. During another fixation both eyes

"fixed" about a quarter of a second and then slowly moved up and out just before the metronome signaled the next movement. On the last fixation the right eye arrived first and fixed for 12/25 seconds, while the left eye arrived 9/25 seconds later and fixed only 3/25 seconds. The final three fixations were practically normal in speed and in binocular adjustments. This particular record gave a clear illustration of the characteristics of ocular movements during what Bills[1] has termed a "block." It is clear that ocular efficiency is reduced temporarily, but in a short time, there was a recovery of function.

The vertical adjustments were uniformly normal for all four subjects. The only exceptions occurred in one or two special cases cited.

Convergent and Divergent Movements. The mean time required to complete the convergent and divergent adjustments between the fixation objects placed at different distances are summarized in Table II. The time required to make the movements from the distant to the near fixation point showed a consistent and significant increase through the 40 hour test, but, during the 50 and 60 hour tests the movements closely approximated the initial and post-tests. The marked variability found in another experiment[3] was also present and appeared to increase as the vigil progressed. It will be noted that the times reported here are somewhat more rapid than those found in the previous study. In this experiment, however, one eye was not lined up with the fixation points so both eyes converged.

TABLE II

Time Required to Complete Binocular Adjustments in 1/25 Seconds

Av. Fixation Time	Hours Without Sleep							
In 1-25 Seconds	0	10	20	30	40	50	60	Post-
Convergence	5.11	5.18	6.77	7.60	9.72	5.58	5.46	5.44
Divergence	7.84	10.34	10.02	13.18	15.09	12.25	10.93	10.10

There was a similar change in the speed of the divergent adjustments. There was a definite decrease in speed of movement on the 30 and 40 hour tests, while at the 50 and 60 hour test the rate closely approximated the initial and post-tests.

The records of convergence and divergence were remarkably free from marked irregularities such as those found during simple interfixation movements. One S (Th) showed no changes which could be clearly differentiated from his normal performance. During the 50 and 60 hour tests Fr's vertical components were slower although accurate comparisons were impossible. Occasional vertical movements required

1/5 second. On his final 40 hour test Li showed similar reduction in the speed of the vertical component, and also in the last few fixations made only very inaccurate attempts at convergence and divergence.

On the 50 hour record St made slow saccadic movements in the vertical meridian, but reported that he always saw the distant object double. His records indicated that he made an attempt at divergence but was unable to successfully complete the movement.

The failure to record more marked irregularities in convergence and divergence is probably due to the fact that the command, "shift," to the other fixation objects probably was a sufficient stimulus to arouse the S's to increased effort for the remainder of the test which was not continued long enough to record marked abnormalities. It will be remembered that a series of practice trials immediately preceded the simple interfixation movements so the fixation movements which were recorded were the last of a relatively long series as compared to the convergent and divergent movements which immediately followed the command to change the type of movement. Another explanation is the possibility that the records did not unequivocally indicate whether the two eyes were accurately fixated on the fixation objects.

SUMMARY

An analysis of binocular photographic records of interfixation, convergent, and divergent movements during a 65 hour vigil gave results which were comparable to those exhibited in other functions measured during the periods of sleeplessness. Although certain gross changes did occur, they were uniformly temporary and recovery occurred on subsequent tests, sometimes on subsequent fixations in the same test series.

The average size of the binocular adjustments during fixation did not increase as the vigil progressed although there was an increase in the size of the corrective movements and the time to make the binocular adjustments. The time required to make the saccadic movements between the fixation points showed the most evident changes with increases of as much as 800%. However, recovery occurred on later tests. This behavior is an illustration of "blocking" which occurs during fatigue.

The convergent and divergent movements were even more uniform than the interfixation movements. Only two or three blocks were evident on the photographic records as indicated by marked binocular discrepancies or by reduction in speed of movement. This was probably

due chiefly to a command by the experimenter immediately preceding the records. Such a command, which increased the attention, was not given before the interfixation records.

The data clearly show the limitations of initial and terminal tests during experimental fatigue and how readily subjects may compensate during such tests. Binocular eye movement photography as used in this experiment does not supply the need of a fatigue test which will eliminate or reduce compensation. This is partially due to the fact that in its practical use, it does not test over a long enough period to be effective in reducing compensation.

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REFLECTIONS ON A. O. A. POLICIES AS OPTOMETRY MEETS THE CHALLENGE OF A NEW ERA

The world is entering upon a new era. The whole political, economic and social structure is being redesigned. The impact of aggressive totalitarian states and their philosophy of life challenges the status quo, and the very act of mobilization of a nation's resources to resist this challenge forces upon that nation the regimentation it seeks to avoid. Irresistible forces sweep us onward to an inevitable change of the old order.

These forces have already banished free individualism in the sense which we have known it. We see the right of a patient to select a doctor of his own choice restricted. We find the right of an optometrist to serve his patient and the value of a state certificate in optometry annulled by the decisions of an appointive board in Washington; even the fundamental right of an optometrist to buy lenses and frames of his choice is

restricted by the litensee method of distribution. As we examine the trend of the changes we observe about us, we are enabled to predict the probable character of the competitive struggle optometry may have to face in the new order.

Optometry of tomorrow will have to meet the challenge of an ophthalmological program of public relations on a national scale. One present evidence of this impending impact is found in the activities of the National Society for Prevention of Blindness, an investigation of which will give us the essential features of what the future may hold on a larger scale. Under the title, *"Oculists Engage in Public Relations"* in the December issue of the AMERICAN JOURNAL OF OPTOMETRY Koch[1] will review some of the public relations activities of organized oculists. According to Koch this organization has a very large budget to carry the message of the oculist to educators and social workers. It also develops state organizations to carry the ophthalmological propaganda direct to the public, in addition to the publication of a magazine called the SIGHT SAVING REVIEW. The growing list of articles devoted to ophthalmological propaganda in our national magazines leaves no doubt that Public Relations is the Number 1 activity of the ophthalmological profession. Optometry of tomorrow will have to reckon with an expanded and more efficient national program of oculist propaganda.

On a rapidly approaching tomorrow the optometrist will have to meet the impact of a local oculist public relations program in his own community. We can observe a prototype of this in the Lake County Medical Society public relations program. This Indiana community claims to be the first to have a well organized medical public relations program. The Lake County Medical Society[2] has employed a public relations counselor and has made the double analysis recommended by Bernays. The program plans to discipline unethical physicians and expose quacks. It will carry the medical and oculist story to the local press, the schools, churches, Department of Public Welfare, the Boy Scouts, Girl Scouts, insurance companies, related professions, governmental officers, industries, chambers of commerce, legislators, parent-teacher associations, women's clubs, service clubs, lodges, etc. The probable media of the publicity family to be employed are, "news, advertising, magazine articles, motion pictures, radio broadcasts, photographs, public speeches, exhibits, books, reports, posters, meetings, brochures, special events," etc. We quote, "Increased income for the individual physician, through public relations for the group, is assured because the

society will be able to advertise facts that prove a uniformly higher quality of medical care.—Herein lies the opportunity to compete, with a guarantee of success, with the advertising quacks and fakes, cultists and unethical physicians." The article concludes with the following, "An inviolable pride in the profession is another natural and most desirable result of a sound program in public relations. Through an adequate long range program, such as we contemplate, the designation 'Member of the Lake County Medical Society' will come to be synonymous with 'honest, ethical, capable, practitioner' because the self discipline imposed by public relations will soon eliminate the dishonest, the unethical, and the incompetent. *This, as we see it is medicine's No. 1 job. This is Public Relations.*"

This Lake County Medical Society experiment in a local public relations program is the first of its kind and is expected to be widely copied by other societies. We quote, "To our knowledge this is the first scientific approach to public relations that has been made by any county medical society.—Other societies will be quick to learn from our experience that in good relations with the public lies the power to defeat those who would regiment or otherwise impede the orderly progress of the profession." Therefore, we observe that the second factor, which optometry of tomorrow must reckon with is an aggressive, well organized and directed program of medical public relations in our local communities.

The third factor which the optometric profession of tomorrow will have to meet is a new type of dispensing. It will be a combination of group or "cooperative" methods combined with an aggressive oculists dispensing program. The New York Optical Membership Plan, Inc., may be one of the first evidences of this type of dispensing. Under the title, "Bargains in Better Vision," we find a nice bit of propaganda for this organization in the NEWSWEEK of October 14th, 1940. For an annual membership fee of one dollar members may secure either optometric or oculist examination without charge and glasses at 30 to 50 per cent below usual scales. However, the most virulent attack from this type of dispensing has occurred in California. There the enactment of an opticians dispensing bill has furnished the opportunity for this situation. Glasses are furnished at 50 per cent off retail prices in most communities. The number of dispensers has increased five fold according to reliable reports. Each dispenser serves as a "feeder" for the upstairs oculist who cannot advertise on account of "medical ethics." The account

of this activity in the WESTERN OPTICAL WORLD[3] closes with, "If the change in the dispensing business in California is a criterion to judge the entire country, it would seem that the down-stairs optical business is definitely swinging away from Optometry." The third factor, therefore, with which the optometry of the future must reckon, is a new type of oculist dispenser competition combined with a group cooperative sales plan.

The fourth factor with which a reckoning must be made by the optometric profession in the near future is the almost inevitable expansion of the scope of the Social Security Program. As long as the present war lasts we shall have a period marked by relatively little tendency toward expansion. With the end of the conflict, however, there will be an inevitable collapse. Millions of citizens will be thrown upon the state for sustenance and preservation of health. Unless optometry has the intelligence and the intestinal fortitude to organize resolutely in this period of apparent calm to meet adequately this situation, the inevitable expansion of the social security program will deprive the major portion of the clientele of optometrists from using optometric service. Attendant to this factor and likewise to be reckoned with by optometery is the probable expansion of the Social Security discrimination to ninety per cent of the clientele of optometrists under the emergency of the coming post war depression.

In the immediate future, perhaps only a few years hence, optometry from Maine to California may be face to face with all four of these new forms of competition. While any one of them alone would be sufficient to be the basis for serious thinking, optometry may be facing a quadruple competitive "Blitzkrieg" that transcends anything that we can now imagine. When the effects of these actions are felt following the end of the war, it will then be too late for us to organize for defense. Medicine regrets their late discovery of public relations. We quote from the LAKE COUNTY MEDICAL NEWS.[4] *"Had medicine long ago 'Discovered' the kind of public relations outlined above, as has much of industry and big business, politicians would not have dared to suggest a socialization of medicine."*

To meet these new competitive forces many optometrists are relying upon the old methods which have been successful in the past in competition with the individual oculist in the same community. *But today the oculist is organized nationally on a quadruple front and his competitive striking power has many times the force that it had as an*

unorganized individual activity in the past. We must meet these modern innovations. The older competitive agencies such as a downstairs location, and advertising, have been proven to be worthless when pitted against the rules of the social security board or the California oculist-dispenser-group cut-price cooperative sales program. These methods of optometric competition of a former era will have been rendered impotent and obsolete as oculists become organized to promote a national program of public relations. With the probable rapid expansion of organized medical public relations, down to county groups, the use of these obsolete competitive agencies will become a grave liability instead of an asset. In order to secure maximum effectiveness for the medical and oculist program of public relations, optometry should be unorganized and without an adequate public relations program of her own. And such is the case.

The national and local public relations program of the oculist is the effective way of pleading their case before the Bar of Public Opinion Optometry has consistently avoided making a comparable appeal to Public Opinion. The first step in the preparation of optometry's case before the Bar of Public Opinion is not the preparation of publicity but the examination of optometry. Wright[5] quotes T. J. Ross, successor to Ivy Lee, noted public relations counselor, as follows, *"Thus, the first task of any one concerned with the public relations of an industry is to look not outside to the making of statements to the public, but inside to what is done and the way it is done.—Unless industry has that conception, printer's ink, the radio, the platform, the screen are futile. Only with a sound policy established and followed can publicity function successfully in interpreting business to the public."* If one had been writing about optometry he might have continued by observing that defense of optometry in the press and national magazines would produce no permanent results since optometry is reluctant to make a rigorous self examination and eliminate practices that violated the public's conception of what a professional practitioner should do.

Wright[6] also quotes another outstanding authority in the field of public relations, Mr. Edward L. Bernays who says, "A public relations program or policy must be integrated into the entire functioning of an industry. It cannot be lip worship to an ideal. It cannot consist merely of releases from a mimeograph machine. *It must be part and parcel of the thinking and action of the leaders in the industry. And it may mean*

that such thinking and action must be decidedly changed in order to conform to public demand and public objectives."

The preparation of the case for optometry for presentation before the Bar of Public Opinion is public relations and not publicity. Wright[7] clearly differentiates between public relations and publicity when he writes, *"By this time it should be clear to us that public relations and publicity are not the same thing. Public relations is essentially and primarily a matter of policy. It has to do with creating, shaping, and carrying out policies which eventually will be reflected in public good will. Publicity is the technique of making the public acquainted with these policies and is only one small part of the whole field of public relations."* On the other hand consider how befuddled optometric thinking is on this point. We quote from a current editorial in the OPTOMETRIC WEEKLY[8] as follows, "In our recent survey, we tried to find out the real thought of our men as to what they wanted, and we were convinced that in the minds of all but a few (who think along the line of Wright and Bernays) who feel that they have a corner on knowledge, that there is just one thing that will put optometry side by side with dentistry, and that is publicity. The profession has spoken. Publicity should be our goal." If this befuddled state of mind in optometry is not rapidly dissipated, no adequate defense of optometry can be made before the Bar of Public Opinion.

What factors in optometry must receive attention in order adequately to prepare optometry to present its case before the Bar of Public Opinion? These we believe will be discovered to be foremost:

(1) Optometric educational institutions must have cash incomes or endowments of such amount that tuition fees will furnish only half of the operating expenses. Morris[9] cites the requirements of the Association of American Universities as the ultimate requirements which optometric educational institutions must comply with for complete recognition.

(2) Optometry must have a six year course of which two years are cultural and pre-requisite to a four year professional course. This has been advanced by more than one optometric writer and educator. Loomis,[10] Associate Commissioner of Higher Education in New York, advocates a six year course. The need for expanded curriculum in the basic sciences and medical aspects of refraction is confirmed by an analysis of the statements of Reed[11] in the Reports on the Cost of Medical Care.

(3) The elimination of commercialism. The practice of optometry in stores and advertising must cease.

In preparing optometry for its presentation before the Bar of Public Opinion the last of these three internal problems is the one around which will revolve the most heated discussion. This is a real problem. In fact, one outstanding public relations counselor worked with an optometric society for one year in an effort to get together on certain public relations activities. This public relations counselor apparently refused to take the case unless the society was willing to deal with this internal problem of commercialism. The unenlightened opinion of certain commercial members prevailed. They voted for unity and professional suicide in an optometric store rather than the assurance of continued professional existence in an office without advertising. Therefore home remedy substitutes were concocted in place of a real public relations approach. Some of the features of a public relations program were copied and applied in an unorthodox way. Thus we find the popular optometric opinion reflecting the thinking of the ground floor optometrist. These men seem to place their trust in stores and advertising just as the French trusted in the Maginot Line. If there be those who care to dispute this statement then let them produce definite action (not words) which demonstrate their willingness to deal energetically with these factors.

Mentally speaking, the optometric Maginot Line seems to be (1) the idea that optometry can be sold to the public with stores and advertisers if the latter be honest and discrete. (2) That optometrists must be properly trained in an exact near-point refraction technique of a particular kind and their ability in refraction must be proven by public health optometry participation. These seem to be the characteristic features of the thinking of many sincere and honest optometrists.

Without the elimination of store practice and advertising optometry will be unable to compete with the oculist and his quadruple attack, and optometry will be found guilty before the Bar of Public Opinion. Loomis[12] said, *"A profession is not well served when its practitioners conduct business enterprises under the camouflage of professional titles and the protection of professional legislation.—But I am also certain that optometrists must, for their own salvation, prove to everyone concerned that they are members of a profession and not engaged in a business. Frankly, I do not know how you can convince the people that the optometrist is not running a store unless he stops running a store and devotes himself solely to the conduct of a professional office."* As

long as some optometrists continue to practice in stores and employ advertising to sell glasses no permanent solution of optometry's problem can be achieved. No present optometric activity or value can outweigh this one fact before the Bar of Public Opinion.

The optometric store and advertising has poisoned public opinion against optometry. The editor of the WESTERN OPTICAL WORLD[13] writes, *"Regardless of the motives or methods of practice the greater proportion of the public hold to the belief that an optometrist, having something to sell, will do anything rather than allow a patient to leave his place without ordering glasses."* Public opinion has not been poisoned for the reason that the same man who examines the eye also provides the glasses. Does the public question the motives of the dentist who sells a $100 denture on an original $5.00 examination fee? Does the public question the motives of the surgeon who sells a $200 operation as the result of a $10 examination? Why, then, should the public question the motive of an optometrist who sells a $15 pair of glasses on a $3 examination? The solution of the problem is the elimination of the optometrical store and all advertising rather than the prohibition of the eye examiner from participating in the profit on the glasses he recommends. Even oculists are unwilling to consider existence upon examination fees only. The editor of the FORTUNE MAGAZINE[14] writes, *"Finally the western 'wholesale' system, startling as it may be, suggests an efficient method of marketing eye glasses, if the physician there did not pocket a retail profit for a retail service which he does not perform. His customary excuse for taking the rebate is that he cannot exist on his examining fees alone."*

The fact that the store practice of optometry has poisoned public opinion is substantiated by an investigation made by Morris[15] several years ago. A questionnaire was circulated to 150 university students. Sixty-eight per cent declared that an optometrist who practiced in a store did so with a loss of professional prestige and dignity.

The first step optometry might take toward solving its problems would be a series of forums in connection with regional educational congresses. These forums would offer optometric leaders opportunity to study scientifically, these problems under the guidance of a recognized authority in this field. Such an authority exists and is available to optometry without resorting to the employment of a public relations counselor. We might, for example, secure the services of a university pro-

fessor in a special department devoted to public relations and public affairs from one of our large eastern universities.

The second step would be taken when the leaders of optometry had carefully studied the entire problem of the relation of optometry to the public from all angles. It would involve the minute examination of optometric practices and resources by a competent specialist. The third step would be an examination of public opinion. When the factual data is found which clearly determines what the public thinks about store practice and advertising on the part of professional men, optometrists will probably learn a number of facts that will be a distinct surprise to them. The fourth step would be an intensive program to educate optometrists regarding the factual data uncovered in the second and third steps of the program. This educational program would influence the intelligent ground floor optometrist towards the idea of professionalization. The store optometrist is not dull, in fact he is rather a keen fellow. When the clear cut facts are presented to him showing the trend of public opinion he will be glad to lend his cooperation to the movement to eliminate commercialism. When it can be proven scientifically that advertising and a ground floor practice will not pay dividends in the next decade, then the better elements among this group will voluntarily go along with the program of professionalization.

There may be some who doubt that commercialism can be eliminated with the voluntary aid of the store optometrists. To such skeptics we suggest they read how Bernays cleaned up the liquor traffic and brought it out of disrepute into a measure of public acceptance. Optometry is not, and never could be, in the same disrepute that the liquor industry found itself, but there is a similarity. The story how Bernays did the impossible is found in LIBERTY[16] under the title, "The Brewers Clean Their House." Optometry can voluntarily eliminate commercialism, when and if we are ready to believe that it can be done. As long as we insist that it cannot be done and are unwilling to give any one an opportunity to work out a program of this character it is impossible of achievement. The impossibility is only a mental attitude and not a physical obstruction.

The fifth step would be the solution of the educational problems and would include adequate financial endowments for our optometric schools. It would also include adequate instruction on a six year basis and a doctorate degree based on equivalent of university credits. Then

there would also be the financial problem of financing the entire program.

The sixth step would be publicity to tell the public the story of the rededicated optometry. The activity in all of the preceding steps would furnish the factual data for an ever expanding publicity program. When optometrists are willing to do all that we have outlined, the story of what they have done and the ideals for which they are working will sell optometry to the public and give it a permanent and honored place in the social order.

In actual practice it would be wise to do some immediate tentative publicity work, on an emergency basis, to neutralize some of the anti-optometry propaganda and win the attention of optometrists so that they will be receptive to the details of the program when approached.

If optometry continues to putter around with superficial measures for the next few years or until the end of the present war, this quadruple Blitzkrieg may be so well under way that optometry may be engulfed as were the French. The editor[17] of the LAKE COUNTY MEDICAL NEWS observes that "Frenchmen, not Germans, it is said, defeated France." Likewise if optometry is defeated it will be due, not to outside attack, but to internal weakness to resist effectively.

Now is the time for action. When the competitive value of individual advertising and store locations have been reduced to the zero value, then it will be too late to begin preparation for finding an effective substitute. DeGaulle did his best to get France to mechanize its army before the war. When Hitler's mechanized Blitzkrieg had France upon her knees, then DeGaulle was called in to present his views. But then it was too late. France had lost her chance. We hope that optometry will do better.

Optometry might profit by the comparable experience of France in its misplaced confidence in a Maginot Line. This month, the American Optometric Association is asking optometrists to subscribe $60,000 to finance what seems to be an optometric Maginot Line. The present A.O.A. program, while excellent in some particulars, is, in the belief of many, inadequate to meet the full needs of optometry.

The basic and fundamental requirements of our profession in the fields of education have received scant attention while the greater portion of our effort in this direction has been given to the matter of post-graduate education. This is commendable but all the education of this kind that we can promote will not save optometry unless it places

its basic educational institutions upon such a financial basis that they will command equal recognition with other professions in the quality of their product. The present A.O.A. program is likewise inadequate to deal with the problem of commercialism. Here again we find post-graduate education advanced as a panacea for the problem of commercialism and we find that this accessory educational factor commands the attention of optometry to the exclusion of many really essential matters.

Adequate attention to basic problems in the fields of education and professionalism is the essential requirement in cultivating satisfactory relations with the public. Only when optometry has made itself strong internally can the full utilization of the various members of the publicity family be employed. This method of optometric defense appears to be more difficult for some to understand than the construction of a Maginot Line. This method of optometric defense is the *public relations way*. It is the only safe way. The cost of this type of adequate protection is less than the cost of the proposed $60,000 optometric Maginot Line.

For the future our course is plain. In common with all good optometrists the AMERICAN JOURNAL OF OPTOMETRY will continue to support the A.O.A. in all its efforts for the common good of the profession. To commend that organization and its leadership when we feel commendation is deserved and to criticize when we feel mistakes have been made.

Optometry should accept advice from non-optometric sources with appreciation balanced by critical examination and extreme caution. However, optometry can follow medical example and precedent with confidence. Optometry should emulate the example of the Lake County Medical Society and adopt Public Relations as its No. 1 Job. Then optometry should make the elimination of commercialism its No. 1 assignment. That will build optometry the safe and permanent way.

Clarence W. Morris.

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SPECIAL REPORTS

LOW MYOPIA DECREASED BY MEANS OF BASE-OUT EXERCISES: A CASE REPORT*

A. G. House, Opt.D.
Tucson, Arizona

The following is a case report in which the patient evidenced a tendency toward a divergence of the visual axis, coupled with a reduced visual acuity apparently due to myopia of a low degree. This case was diagnosed as having a restricted myo-fusion function and was given treatments. The squint korector was used along with various high powered base-out prisms, until these could be overcome. As the result of these exercises, the myopia was materially reduced and the patient's symptoms were relieved.

Patient, female, age 23. Symptoms, headaches and reduced visual

*Submitted for publication August 9, 1940.

acuity. Uncorrected visual acuity: O.D. 20/50. O.S. 20/50. Vision could be brought to normal by the use of O.U. —1.00 D. Spheres. Patient had an exophoria of 1½ △ at 6 M. Other findings were negative, though ocular motility or versions were very poor. The findings which lead the writer to make a diagnosis of improper relationship of the myo-fusion amplitudes were as follows: Base-in divergent myo-fusion amplitude at 6 M. was 11 prism diopters, the same finding at 50 cm. being 26 prism diopters. The base-out convergent myo-fusion amplitude at 6 M. being 30 prism diopters, while the corresponding finding at 50 cm. was 40 prism diopters.

As has been said, base-out exercises were then prescribed with occasional controlled base-in exercises for balanced ratios, the patient's convergence amplitude increasing to 90 prism diopters base-out with fixation at either 6 M., or at 50 cm. Visual acuity has improved without lenses to 20/30+, and the patient's symptoms have disappeared.

DR. A. G. HOUSE
410 EAST SPEEDWAY
TUCSON, ARIZONA.

Current Comments by Carel C. Koch

A Monthly Department

in which the Editor of the AMERICAN JOURNAL OF OPTOMETRY will discuss items of news of general interest; such as relate to new instruments, clinical techniques, education, public health, and optometric legislative and organization problems.

GOVERNMENTAL MEDDLING WITH INDUSTRY

The government has brought pressure to bear upon a number of industries during the past six months. It is now well to compare and review the unrelated and confusing industrial policies which emanate from various departments of our national government at Washington. Let us, for instance, consider the optical industry and the coal industry. Both necessary to the welfare of the citizens of America and both facing federal action because of marketing problems. Action typical of that confronting nearly all American business today.

The department of the interior at Washington has placed into effect a rate schedule raising the price consumers have to pay for coal.

This was done, they claimed at their department office, because they felt the coal industry was selling its product too cheap for its own good. The coal operators on their own initiative refused to adopt and adhere to a uniform price schedule, so the Government established one for the entire industry and made it obligatory for all to conform to these new and higher rates. We are told, chiselers can be punished under this new ruling.

At about the same time that the government was raising coal prices and making coal competition illegal, the department of justice (another Washington Bureau) was filing proceedings against the optical industry. Suits were brought against a number of leading optical manufacturers and distributors, charging the defendants with conspiracy to uphold the prices of optical products.

In other words, the optical industry is being prosecuted for doing what the government has compelled the coal industry to do. This is a classic example of the New Deal's ability to ride off in opposite directions at the same time. Here we find one department taking legal steps to raise the price of coal while another Washington department engages in other legal moves to reduce, if possible, the price of optical material. And it is in the hands of bureaucratic departments, such as these in Washington, that some optometrists would like to place the future of optometry!

While to be sure, optometry plays but an incidental part in the aforementioned, legal, optical action, it is nevertheless true, that if there were ever a time when our profession needed a strong virile headquarters office in our capital city, it is now, to protect optometry from the inroads of governmental meddling of the kind which now confronts most industrial groups and even some professions.

AMERICAN ACADEMY OF OPTOMETRY TO MEET IN CHICAGO

The nineteenth annual meeting of the American Academy of Optometry will be held at the hotel Morrison, Chicago, Illinois, December 8, 9, and 10, 1940. The Chairman, Dr. Don R. Paine of Topeka, Kansas, will preside. Dr. J. Fred Andreae of Baltimore, Maryland, as Secretary, will read his annual report. The following technical papers will be presented.

Robert E. Bannon, "The Technique of Measuring and Correcting Aniseikonia."
R. C. Baxter, Jr., "Positive Fusional Reserves."
Howard C. Doane, "Aniseikonia: A Detailed Report and Analysis on 500 Cases."
Glenn A. Fry, "Individual Variations in the Accommodative-Convergence Relationship."
Wm. M. Gilbert, "A Survey of Visual Acuity."
Richard M. Hall, "A Modified Procedure for the Treatment of Amblyopia."
W. J. Heather, "Motivating One Hundred Thousand Patients."
Matthew Luckiesh & Frank Moss, "The New Method of Subjective Refraction at the Near Point."
L. W. Palm, "Field Analysis."
George A. Parkins, "Controlled Research vs. Clinical Research."
S. H. Shurin, "Investigations of Interpupillary Measurements."
Edwin H. Silver, "Motor Vision."
Marguerite Thoma, "Summarization and Criticism of the Statistical Data on the Effect of Visual Difficulties on the Reading Problem."
Arthur P. Wheelock, "Cataract and Against-the-Rule Astigmatism."

The program and meeting arrangements for this annual session of the Academy are under the direction of Dr. Laurence P. Folsom of South Royalton, Vermont.

VISUAL SAFETY CLINIC IN OHIO

Under the direction of the optometrist Grimm of Delaware, Ohio, a committee of optometrists of the Ohio State Optometric Association, assisted by the teaching staff and students of the School of Optometry of the Ohio State University, conducted the visual tests in a Traffic Safety Clinic sponsored by the State Highway Department in the new Highway Building during the recent State Fair.

The exhibit as a whole was devoted to the theme of "Traffic Safety." The highway department sponsored tests for (1) judgment of distance (2) subject's reaction time (3) tunnel vision and (4) judgment of speed. These tests were designed to indicate to the subjects tested, that although the subject's motor car may be mechanically perfect the driver at the wheel may have defects, which unless understood and compensated for, may result in motor car accidents.

The subject after taking these tests then passed on to the optometric section of the clinic where the following ocular data was recorded. (1) correction used while driving (2) monocular and binocular corrected visual acuity at 6 M. (3) lateral and vertical phoria at 6 M. (4) recovery of fusion after diplopia (5) versions (6) color perception tests and (7) ocular dominance and handedness.

The optometric tests were supervised by Dr. Glenn A. Fry, director of the School of Optometry at Ohio State University. These tests were

made by teams of five examiners who worked in varying shifts. The data developed as the result of this visual survey will be correlated and published later. This project, sponsored by the State Highway Department, enabled the optometric group to perform a useful service to the citizens of Ohio, in directing attention to ocular abnormalities.

ORGANIZATION AND JURISPRUDENCE

by Clarence W. Morris

A department in which some of the organization problems of Optometry will be discussed and in which certain of the legal aspects of refractive work will be reviewed.

ESTABLISHING A PROFESSIONAL PRACTICE

Establishing an optometric professional practice today is entirely a different matter from that of forty years ago. We optometrists are offering a professional service. The value of this service depends entirely upon our professional ability, our integrity and the interest we take in the problems of our patients. Consequently, to appeal for patients through the medium of advertising or a commercial location is incompatible with the dignity of the service we have to offer.

There are but three ways in which one can expect new patients. They may come from old patients, personal friends or from other practitioners. If an optometrist has not been associated with another practitioner in his community long enough to build up a personal following before he opens his own office, he can expect no short road to the establishment of a professional practice. Without some kind of a following one must then have capital to tide over the lean years, or the versatility to find an equivalent.

Optometrists, who lacked adequate capital have established themselves in professional practices due to their ability to find satisfactory substitutes for capital. The writer knows of one optometrist, who opened his office when the depression was at its depth. Lacking capital he moved his residence to the country where he rented some farm land and worked a few hours each day sufficient to make up for his lack of finances until his practice had grown so such proportions that it now demands all of his time. Another outstanding optometrist is on the faculty of a local college to which he gives part of his time. Another,

who has an ability to handle tools, supplements his capital structure by three or four hours work each day on some bit of profitable construction. All of these optometrists have outstanding professional practices. They have maintained the dignity of their profession regardless of the cost to themselves in personal sacrifice.

On the other hand, I know of a young graduate who opened a professional office a number of years ago. He believed that the world owed him a living. Therefore when he found the going a bit rough he turned to price advertising instead of seeking a solution consistent with professional ethics. The real friends among his patients and other practitioners were greatly disappointed. Today this young fellow is one of the few remaining specimens of an almost extinct animal—the optometric stooge for a corporation.

There are, therefore, in the optometric profession such intangible things as ideals for which men are willing to endure inconvenience. Let us examine this ideal for which men will endure so much personal sacrifice and effort. We observed that the professional optometrist makes no effort to secure new patients by advertising. He has a philosophy that fairness both to his patients and his colleagues is incompatible with advertisng. Advertising is, in effect, an attempt to lure away patients from one's colleagues. In this way of thinking, the refusal to practice without the doubtful advantage of advertising or commercial location is a refusal to place competition upon the basis of quality of service rendered.

The professional optometrist, who repudiates the use of advertising or a commercial location offers his fellow optometrist the type of cooperation that he would like the other fellow to give in return. In other words this intangible thing we call "ethics" or "professionalism" is nothing more or less than the practical application of the Golden Rule to certain problems in the practice of optometry.

Some optometrists are prevented from attempting the establishment of their own practices by reason that optometric standards are sometimes pitched upon too costly a scale. Excessive rents for commercial locations force the use of advertising particularly in the establishment of a practice. When older established optometrists are willing to compete with new optometrists upon an equitable basis the demand for capital and the necessity for finding substitutes for capital in its absence will be modified in favor of the young man entering practice.

Optometrists should compete with one another solely upon the basis of The young optometrist cannot afford to compete on the commercial level even if such practices were compatible with his ethics. Competition upon such a basis would reduce the difficulties of establishing a professional practice. Then also it should be possible to obtain some sort of equality of opportunity for optometrists with other professions to secure part time appointments on various public health projects. Such appointments would greatly reduce the demand for capital for the establishment of practices by the recent graduates.

In this connection we observed that a few years ago there was a great deal of discussion relative to professionalization of optometry. We recognize that a large segment of optometry is definitely professional in character. But optometry, like all other professions has its problems. The need for a revitalized conception of ethics and professionalism is ever with us. The failure to adopt a general program of public relations for optometry has retarded progress in this matter. Sound public relations should begin with the education of the undergraduate optometrist in the matter of professional relationships and then proceed to the practical application of this knowledge, skill and practice building technique with the men already in practice. When this program is fully under way the next step in a public relations program is one in which lay publicity to the citizens of America plays an important part. Only as all optometrists professionalize their practices can a program of professional development and technical advancement for all of optometry come into its rightful and proper realization.

Clarence W. Morris.

ABSTRACTS

EXOTROPES AND MENTAL CAPACITY. J. M. Babcock, Opt.D., F.C.S.O. Syntonogram. Vol. 7, No. 8, August, 1940.

Dr. Babcock's research was carried on in his private practice, using the "Stanford Revision of the Binet Simon Intelligence Tests." He presents some interesting findings which would indicate that the IQ of the Exotrope is below that of the Esotrope. A number of case reports which illustrate this point are included in this paper.

Babcock concludes his paper as follows: "The mental capacity of an exotrope is influenced to an appreciable extent, although, we do have specific cases which indicate the contrary. The innate intelligence cannot be affected—but the development of that intelligence or mentality seems to be, if affected by a lack of the fusional ability and all of the attendant visual phenomenon, and by the situations that are projected—psychologically."

Here is another field of ocular behavior which seems to need exploring

T. A. W. Elmgren, O.D., F.C.S.O.

BOOK NOTICES

TEXTBOOK OF OPHTHALMOLOGY. Volume III. Diseases of the Inner Eye. Sir W. Stewart Duke-Elder, Surgeon Oculist to H. M. The King; Ophthalmic Surgeon, St. George's Hospital; Honorary Research Associate, University College, London. Published by the C. V. Mosby Company, 3525 Pine Boulevard, St. Louis, Mo. 1,325 pages, 1,140 illustrations, 164 color plates. Cloth, 1940. $18.50.

Volume three of this four volume treatise on the eye deals with the pathology of the uveal tract, the retina, the optic nerve and pathways, the crystalline lens and the vitreous body. It also treats and completely covers involvements as brought about by increased intra-ocular pressure as in glaucoma. The text is of immense practical value as every phase of each condition is fully covered and well illustrated. It is the type of book which will prove to be an indispensable possession to the optometrist who values a knowledge of this important subject.

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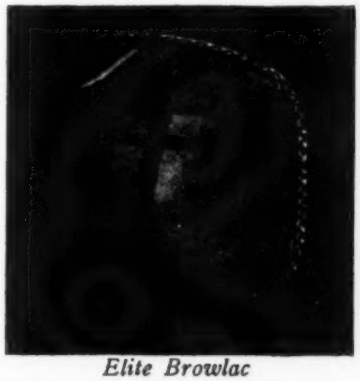

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Management and circulation as required by the Act of Congress of August 24, 1912, of the AMERICAN JOURNAL OF OPTOMETRY, published monthly at Minneapolis, Minnesota, for October 1, 1940.

State of Minnesota, County of Hennepin—ss.

Before me a Notary Public in and for the State and County aforesaid, personally appeared Dr. Carel C. Koch, who having been duly sworn according to law, deposes and says that he is Editor and Publisher of the AMERICAN JOURNAL OF OPTOMETRY and that the following is to the best of his knowledge and belief, a true statement of the ownership and management of the aforesaid publication for the date shown in the above caption required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, to-wit:

First, that the names and addresses of the Publisher and officers are as follows: Publisher and Editor, Dr. Carel C. Koch, 1501-1504 Foshay Tower, Minneapolis, Minn.; Associate Editors, Dr. G. L. DuPlessis, 1501-1504 Foshay Tower, Minneapolis, Minn., and Dr. Clarence W. Morris, 232 Utility Building, Fort Wayne, Ind.; Advertising Manager and Production Manager, Mr. Harry B. Brookins, 700 South Fourth Street, Minneapolis, Minn.; Circulation Manager, Lilly L. Koch, 1501-1504 Foshay Tower, Minneapolis, Minn.

Second, that the owner is the American Journal of Optometry Publishing Association, Dr. Carel C. Koch, President and Treasurer; Dr. G. L. DuPlessis, Vice President, and Lilly L. Koch, Secretary.

Third, that there were no bondholders, mortgagees, or other security holders owning or holding one or more per cent of the total amount of bonds, mortgages or other securities of this publication.

DR. CAREL C. KOCH, Editor and Publisher,
The American Journal of Optometry.

Sworn and subscribed before me this 1st day of October, 1940.

LILLY L. KOCH, Notary Public,
Hennepin County, Minnesota.

(My commission expires May 19, 1943.)

Copied from an old print—"Around the gas lamp for a quiet evening at home in the Nineties."

HOME SWEET HOME

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